1.5 Model 120Rj-2

Features

- Quad-Core Xeon E5405/E5420/X5450/X5460 and Dual-Core Xeon E5205/X5260
- DDR2-667 FB-DIMM memory of up to 48GB with ECC, x4/x8 SDDC, memory mirroring and on-line spare
- SAS disk drives of up to 1.8TB, SATA disk drives of up to 4.5TB
- RAID controller (RAID0/1) as standard

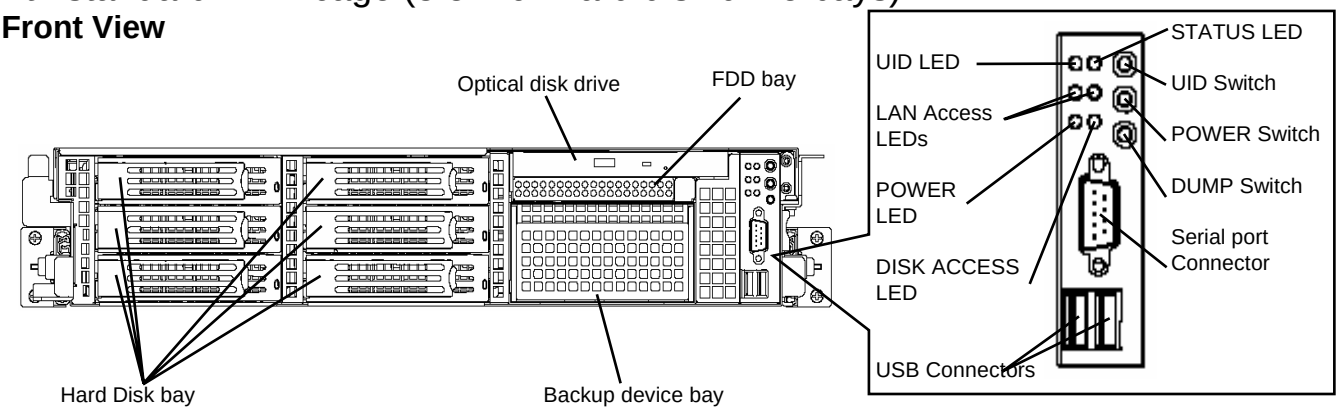
MODEL		Model 120Rj-2					
N-code		N8100-1408F	N8100-1409F	N8100-1410F	N8100-1411F	N8100-1440F	N8100-1412F
CPU		Dual-Core Intel Xeon E5205	Dual-Core Intel Xeon X5260	Quad-Core Intel Xeon E5405	Quad-Core Intel Xeon E5420	Quad-Core Intel Xeon X5450	Quad-Core Intel Xeon X5460
Clock		1.86GHz	3.33GHz	2GHz	2.50GHz	3GHz	3.16GHz
2nd Cache		6MB		2 x 6MB			
No. of CPU		1 (standard) - 2 (max.)					
Intel® 64		Supported					
Chip set		Intel 5000P					
Front Side Bus		1066MHz	1333MHz	1333MHz	1333MHz	1333MHz	1333MHz
Memory		DDR2-667 FB-DIMM with ECC, x4/x8 SDDC, memory mirror, on-line spare memory					
	Standard Capacity	2GB (1GBx2)					
	Maximum Capacity	48GB (4GB DIMM x12) (when standard DIMMs are removed)					
Internal HDD	Standard Capacity	Diskless					
	Maximum Capacity	SATA: 4.5TB (750GB x6), SAS: 1.8TB (300GB x 6) When installing 2.5-inch HDD cage [N8154-14F]: SAS 1.172TB (146.5GB x8)					
	Disk Controller	SAS / SATA					
	RAID*6	RAID 0,1: Standard, RAID 5,6 : Option (SAS Disk Array Controller is necessary)					
	Hot-Plug	Supported					
FDD		Mandatory option*1					
DVD-ROM	Drive	CD-RW/DVD-ROM combo drive*2 (DVD: x8 max. speed, CD: x24 max. speed)					
LAN Interface		1000BASE-T x2 (100BASE-TX and 10BASE-T are supported) (standard)					
Device Bays [open]		1[1] (3.5-inch)					
Disk Drive Bays [open]		6[6] (3.5-inch)					
Expansion Slots [open]	Standard	Full-Height slots PCI Express (x8): 1[1], PCI-X (64bit/100MHz): 2[2]		Low profile slots PCI Express (x8): 1[1], PCI Express (x4): 2[1]*3			
	Optional Riser card [N8116-07]	Full-Height slots PCI-X (64/133MHz): 1[1], PCI-X (64bit/100MHz): 2[2]		Low profile slots PCI Express (x8): 1[1], PCI Express (x4): 2[1]*3			
	Optional Riser card [N8116-08]*7	Full-Height slots PCI-X (64bit/133MHz, 5V): 3[3]		Low profile slots PCI Express (x8): 1[1], PCI Express (x4): 2[1]*3			
	Optional Riser card [N8116-18]	Full-Height slots PCI Express (x8): 1[1], PCI Express (x4): 2[2]		Low profile slots PCI Express (x8): 1[1], PCI Express (x4): 2[1]*3			
Graphics		Integrated in Server Management Controller (8MB)					
Remote Management		EXPRESSSCOPE Engine 2 is configured as standard					
Power Supply		Standard: 1unit (Not Redundant) Option: Max. 2 units (Redundant) (Hot-plug)					
Cooling Fan		Standard: Not Redundant Option: Redundant (Hot-plug)					
Keyboard		Option					
Mouse		Option					
External Interface		Serial x2(D-Sub 9pin)(frontx1, rearx1), USB2.0 x6(frontx2, rearx2, internal x2), 1000BASE-T(RJ-45) x2, LAN for Server Management (100BASE-TX, RJ-45) x1, Display(Mini D-Sub 15pin) x1, Keyboard/Mouse(PS/2) x1*4					
Main unit form		19inch rack mountable, 2U rack height					
	Dimension (WxDxH)mm	445 x 722 x 88 485 x 822 x 88 (when front bezel and the protruding objects are included)					
Weight		21kg (standard) / 31kg (max.)					
Power	Maximum	770VA/760W	800VA/ 790W	800VA/790W	800VA/790W	880VA/870W	880VA/870W
		637VA/627W	644VA/634W	644VA/634W	644VA/634W	656VA/646W	656VA/646W
Temperature and Humidity Condition		During operation: 10 to 35ºC / 20 to 80% (Non-condensing) When stored: -10ºC to 55ºC / 20% to 80% (Non-condensing)*5					
Supported OS (see chapter of S/W for details)		Windows Server 2003 Standard Edition (SP1 or later)/ Enterprise Edition (SP1 or later) Windows Server 2003 R2, Standard Edition / Enterprise Edition Windows Server 2003 R2, Standard x64 Edition / Enterprise x64 Edition Red Hat Linux *6					

*1Choose one from [N8151-73A] and [N8160-74].
*2 Writing software is not supported.
*3 One PCI Express (x4) slot is occupied by RAID controller.
*4 Keyboard and mouse can use simultaneously by Y cable that is attached to main unit.
*5 When stored at a low or high temperature, the system clock may largely deviate from the current time.
*6 Please refer to “Linux on NEC Express5800” (http://www.nec.co.jp/express/linux/index.html)
*7 The optional Riser card [N8116-08] requires more time for shipping because it is Make-to-order product.

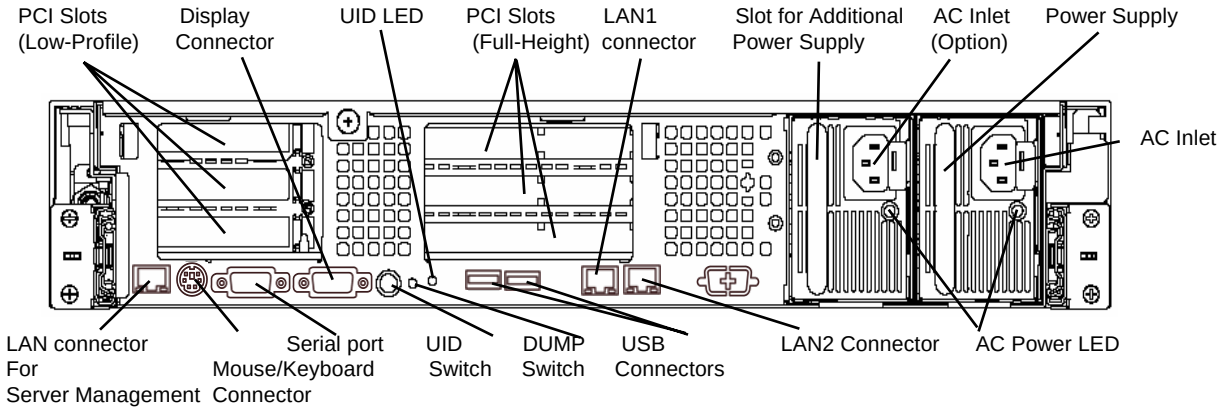
External Design

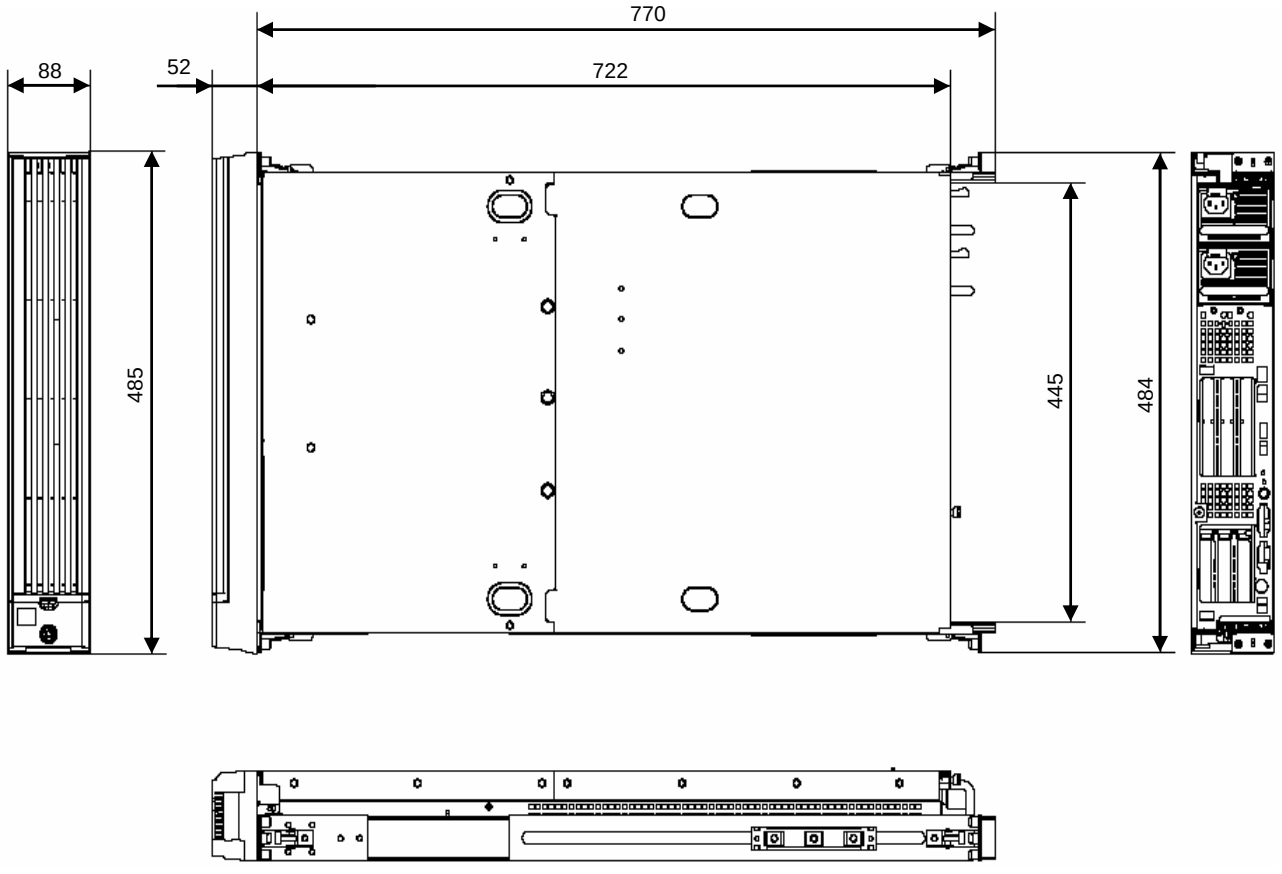
With standard HDD cage (3.5-inch hard disk drive bays)

Front View



Rear View

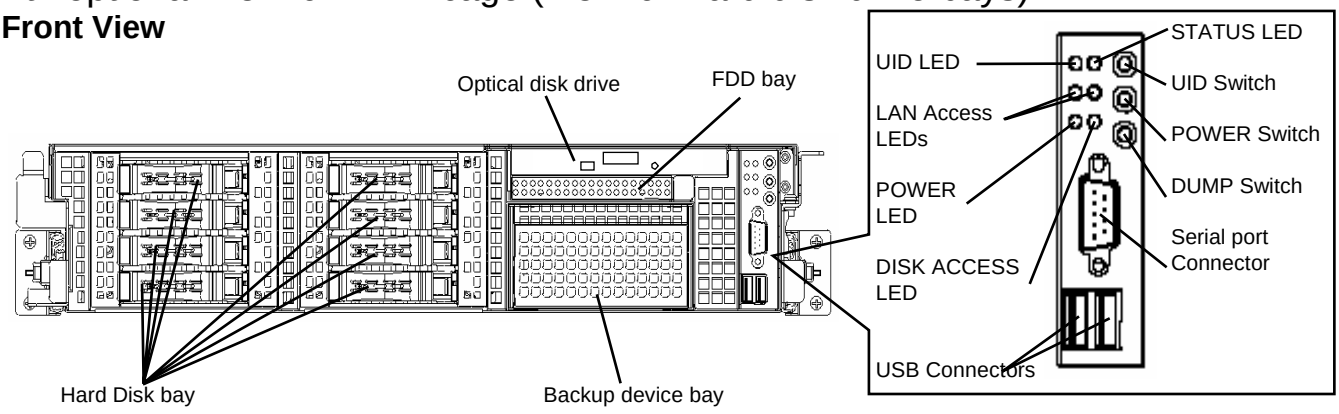




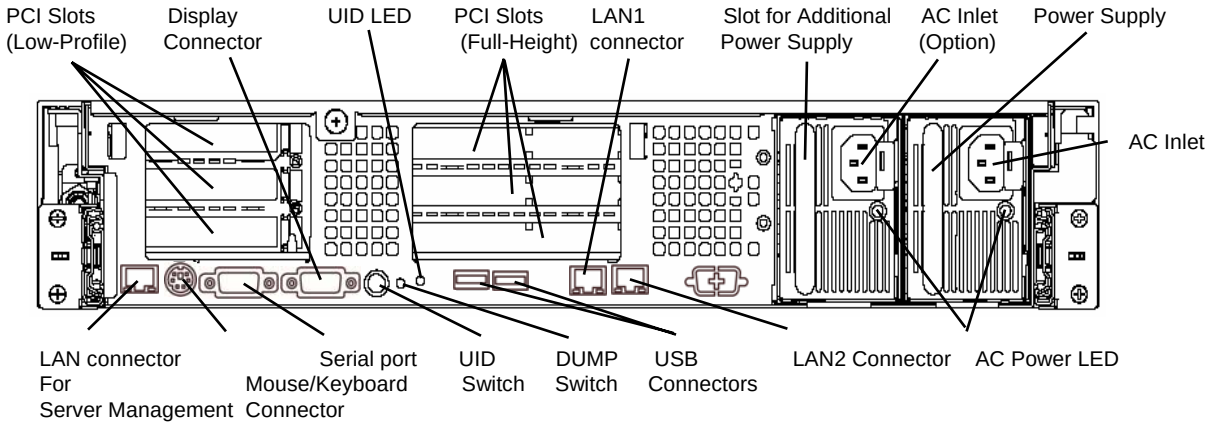
External Design

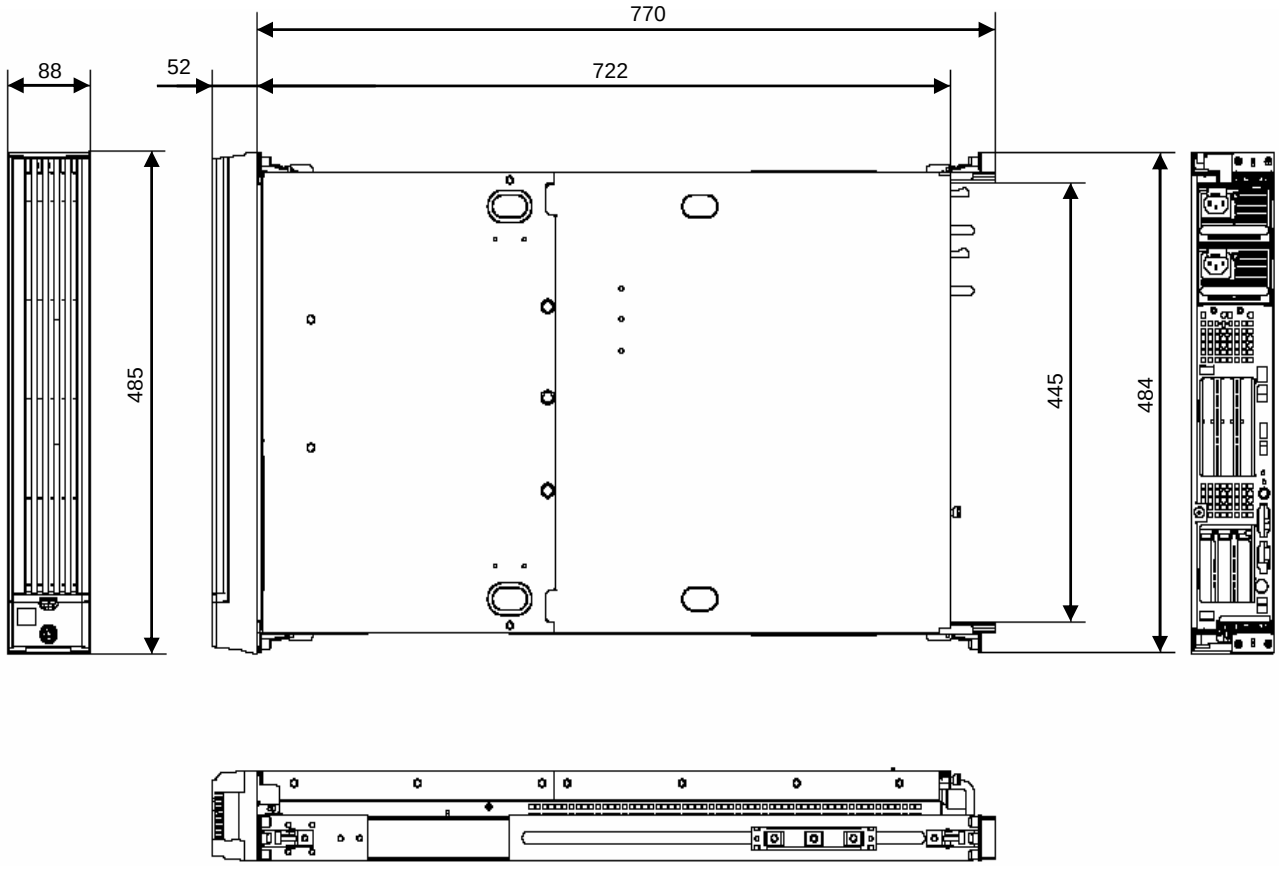
With optional 2.5-inch HDD cage (2.5-inch hard disk drive bays)

Front View



Rear View





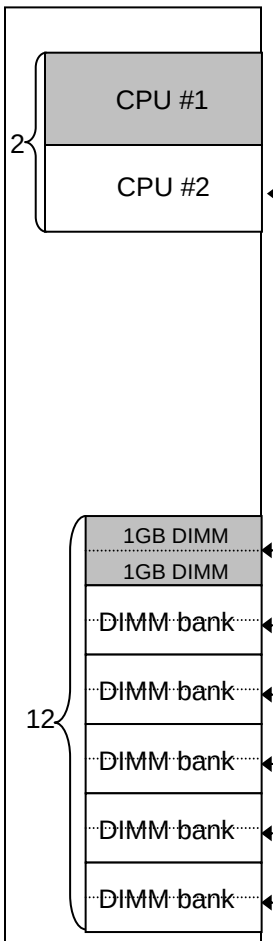
Model 120Rj-2 [N8100-1408F/-1409F/-1410F/-1411F/-1440F/-1412F]

2003 R2 R2x64 EL4 EL4x64

: Standard

: Exclusive connection

* You cannot use the two slots or ports at the same time.



CPU Kit

- CPU Kit (XD/1.86G(6)) [N8101-384] <Dual-Core Xeon E5205>
- CPU Kit (XD/3.33G(6)) [N8101-385] <Dual-Core Xeon X5260>
- CPU Kit (XQ/2G(2x6)) [N8101-386] <Quad-Core Xeon E5405>
- CPU Kit (XQ/2.50G(2x6)) [N8101-387] <Quad-Core Xeon E5420>
- CPU Kit (XQ/3G(2x6)) [N8101-404] <Quad-Core Xeon X5450>
- CPU Kit (XQ/3.16G(2x6)) [N8101-388] <Quad-Core Xeon X5460>

• Do not use processors of different frequencies at the same time.

Additional Memory Module

DDR2-667 memory module

- Additional 1GB memory module set [N8102-309] (512MB x2)
- Additional 2GB memory module set [N8102-310] (1GB x2)
- Additional 4GB memory module set [N8102-311] (2GB x2)
- Additional 8GB memory module set [N8102-312] (4GB x2) *1

*1: When installing four or more [N8102-312], you cannot use two or more PCI boards.

• **Each memory module set includes a pair of DIMMs.**
• Two 1GB DIMMs are factory-installed.
• You can expand the memory capacity up to 48GB by replacing the standard DIMMs.
• The 120Rj-2 supports x4/x8 SDDC, Memory Mirroring, and On-line Sparing.
• **DIMM must be inserted from Group #1 toward Group#6 in ascending order.**
• To enable the memory mirroring and on-line sparing mode, see next page.
• When you use locally procured non-NEC memory modules, see Chapter 2 Information of Local Procurement.

Maximum available memory

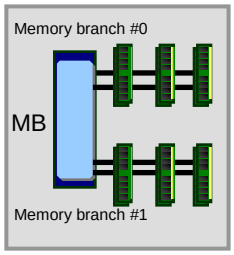
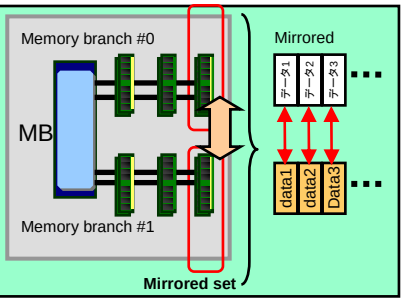
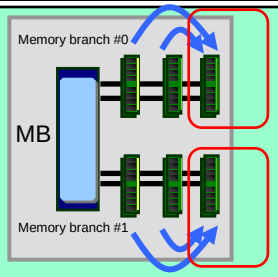
- See the table below for the maximum memory size that you can actually use on your system.
- The maximum available memory is less than the maximum physical memory supported by your system because some chipsets require PCI resource space of about 750MB. The PCI resource capacity varies by type and number of PCI cards you are using.

Maximum memory size supported by OS		Maximum available memory (The 120Rj-2 supports up to **48GB**.)
4GB	Microsoft Windows Server 2003, Standard Edition (SP1) Microsoft Windows Server 2003 R2, Standard Edition	4GB
32GB	Microsoft Windows Server 2003, Enterprise Edition (SP1) Microsoft Windows Server 2003 R2, Enterprise Edition Microsoft Windows Server 2003 R2, Standard x64 Edition	32GB
128GB	Microsoft Windows Server 2003 R2, Enterprise x64 Edition	48GB All maximum physical memory available
16GB	RedHat Enterprise Linux ES4 (x86 / EM64T)	16GB
64GB	RedHat Enterprise Linux AS4 (x86)	48GB All maximum physical memory available
64GB	RedHat Enterprise Linux AS4 (EM64T)	48GB All maximum physical memory available

Memory Mirroring / On-line Spare Memory

The 120Rj-2 supports memory mirroring and online spare memory as standard to improve memory reliability.

- Follow the rules for installing memory DIMMs.
- To enable online spare memory, go to BIOS Setup.
- You cannot use the standard memory mode, memory mirroring, and online spare memory at the same time in the same system.

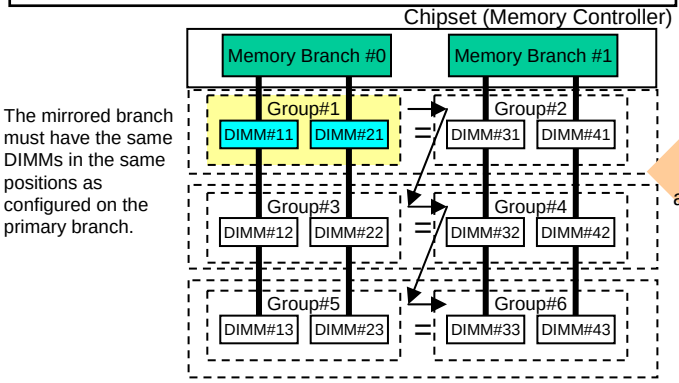
	Standard memory mode	Memory Mirroring	On-line Spare Memory
Configuration			 In the event of a memory failure, a spare DIMM takes over a faulty DIMM online.
Functions	Not redundant (default)	Data mirrored between memory branch #0 and #1	A faulty DIMM automatically fails over to a spare memory on the same memory branch.
Capacity	Same as physical capacity	Half the physical capacity	Physical capacity does not include spare memory.
Hot plug	Not removable during operation	Not removable during operation	Not removable during operation
Reliability	Not redundant	Fully redundant	A faulty DIMM automatically fails over to a spare memory on the same memory branch.

Requirements for Memory Mirroring

- The branch #0 and #1 must be identical in DIMM configuration (size and position).
- No mirroring can be configured between the DIMMs on the same memory branch.

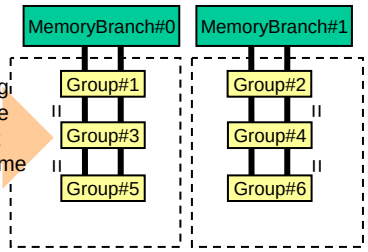
Requirements for Online Spare Memory

- Memory sizes must be the same across memory groups on the same memory branch.
- Memory sizes may vary by memory branches.
- The memory groups farthest from the memory branches are spares.



The mirrored branch must have the same DIMMs in the same positions as configured on the primary branch.

Memory Mirroring and Online Spare Memory are not available at the same time.



Memory combinations for memory mirroring

2GB :standard

	Group#1 DIMM#11,#21	Group#2 DIMM#31,#41	Group#3 DIMM#12,#22	Group#4 DIMM#32,#42	Group#5 DIMM#13,#23	Group#6 DIMM#33,#43	Physical capacity	Logical capacity
combination1	2GB	2GB					4GB	2GB
combination2	2GB	2GB	1GB	1GB			6GB	3GB
combination3	2GB	2GB	2GB	2GB			8GB	4GB
combination4	2GB	2GB	1GB	1GB	1GB	1GB	8GB	4GB
combination5	2GB	2GB	1GB	1GB	2GB	2GB	10GB	5GB
combination6	2GB	2GB	2GB	2GB	1GB	1GB	10GB	5GB
combination7	2GB	2GB	4GB	4GB			12GB	6GB
combination8	2GB	2GB	2GB	2GB	2GB	2GB	12GB	6GB
combination9	2GB	2GB	1GB	1GB	4GB	4GB	14GB	7GB
combination10	2GB	2GB	4GB	4GB	1GB	1GB	14GB	7GB
combination11	2GB	2GB	2GB	2GB	4GB	4GB	16GB	8GB
combination12	2GB	2GB	4GB	4GB	2GB	2GB	16GB	8GB
combination13	2GB	2GB	4GB	4GB	4GB	4GB	20GB	10GB
combination14	4GB	4GB	4GB	4GB	4GB	4GB	24GB	12GB
combination22	8GB	8GB	8GB	8GB	8GB	8GB	48GB	24GB

Memory combinations for Online Spare Memory
Memory branch #0

Config.	Group#1 DIMM#A1,#B1	Group#2 DIMM#A2,#B2	Group#3 DIMM#A3,#B3	Physical capacity	Logical capacity
1	1GB	1GB		2GB	1GB
2	1GB	1GB	1GB	3GB	2GB
3	2GB (std.)	2GB		4GB	3GB
4	2GB (std.)	2GB	2GB	6GB	5GB
5	4GB	4GB		8GB	6GB
6	4GB	4GB	4GB	12GB	10GB
7	8GB	8GB		16GB	12GB
8	8GB	8GB	8GB	24GB	20GB

Your logical memory capacity is calculated using one of the following two formulas:

When you are using 1GB Memory Module Set [N8102-309]:
[Logical capacity]
= [Total of physical capacities] – [Physical capacity per memory group]

When you are using Standard 1GB memory or
Additional 2GB/4GB//8GB Memory Module Set [N8102-310/-311/-312]:
[Logical capacity]
= [Total of physical capacities] – [Physical capacity per memory group]] / 2

• **A color display, a keyboard and a 2-button mouse are necessary but NOT provided with the main unit as standard.**

Display
- Local procurement

1 Video I/F (Mini D-sub 15pin) (PCI/on-board)

1 Keyboard/ Mouse I/F (PS/2)

Y cable *provided with the main unit

Keyboard - 104-key keyboard (US-English) [N8170-19]*

Mouse - 2-button mouse [N8170-15]

***The 104-key Keyboard [N8170-19] cannot be housed in the 19-inch rack cabinet.

Switch Unit Connection Cable Set (1.8m/3m/5m)
[K410-119(1A)] (1.8m)
[K410-119(03)] (3m)
[K410-119(05)] (5m)

Y cable *provided with the main unit

•Up to eight servers can connect directly to the LCD console unit. Use optional Server Switch Units to connect more than eight servers.

LCD Console Unit

A 17-inch LCD, keyboard, mouse, and Server Switch Unit (x8) are integrated into the 1U LCD Console Unit.

- 17-inch LCD Console Unit (1U/8port) [N8143-69F]

Consists of the following components:

17-inch LCD
1280x1024 max., Full color*
*Standard Graphics chip supports up to 256-color for 1280x1024.

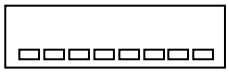
Keyboard (no ten-key numeric keypad)

Optical Mouse

Server Switch Unit
- Supports up to eight servers.
- Allows the connection of up to 64 servers by cascading the Server Switch Units [N8191-10F].

Switch Unit Connection Cable Set (1.8m)
[K410-119(1A)]

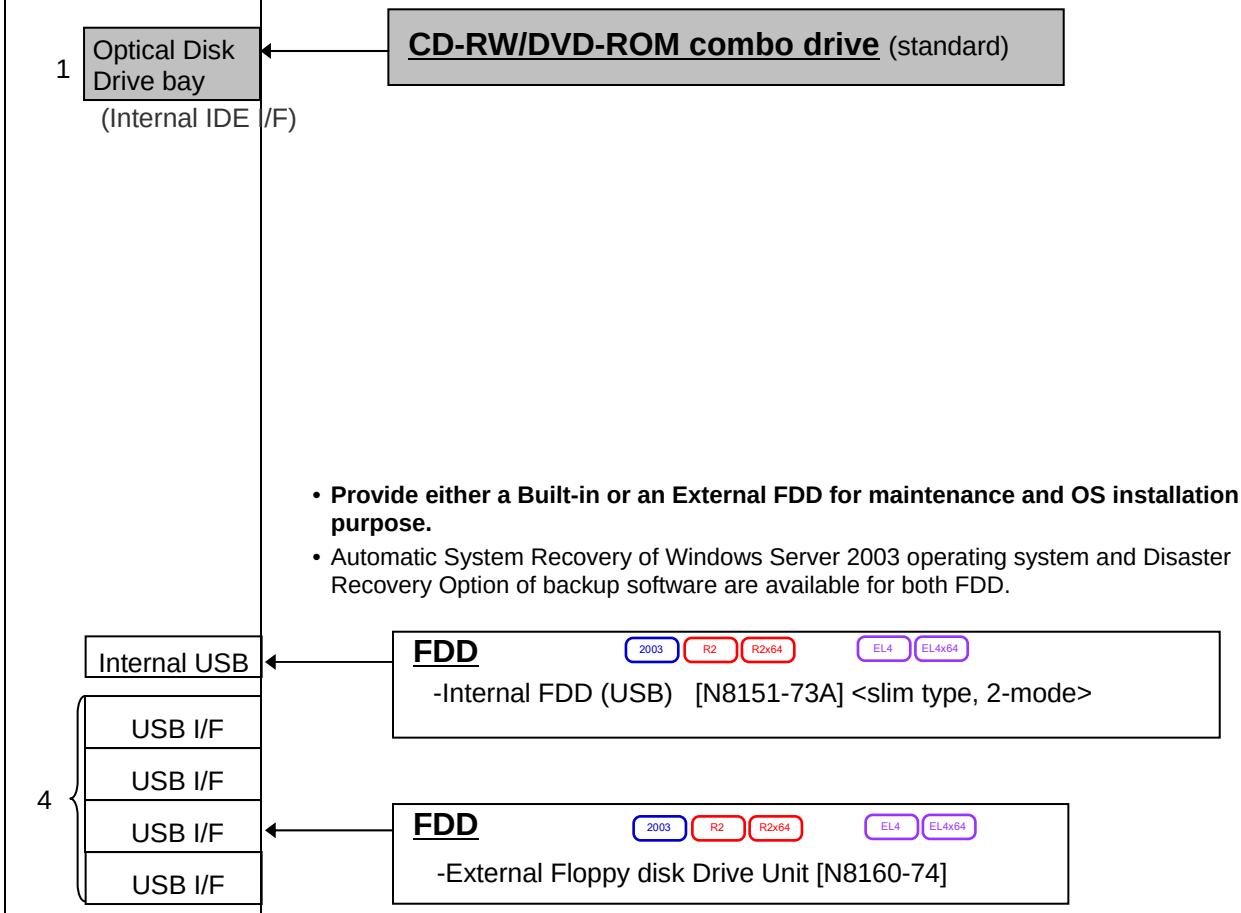
Server Switch Unit



- Server Switch Unit (8 ports) [N8191-10F]

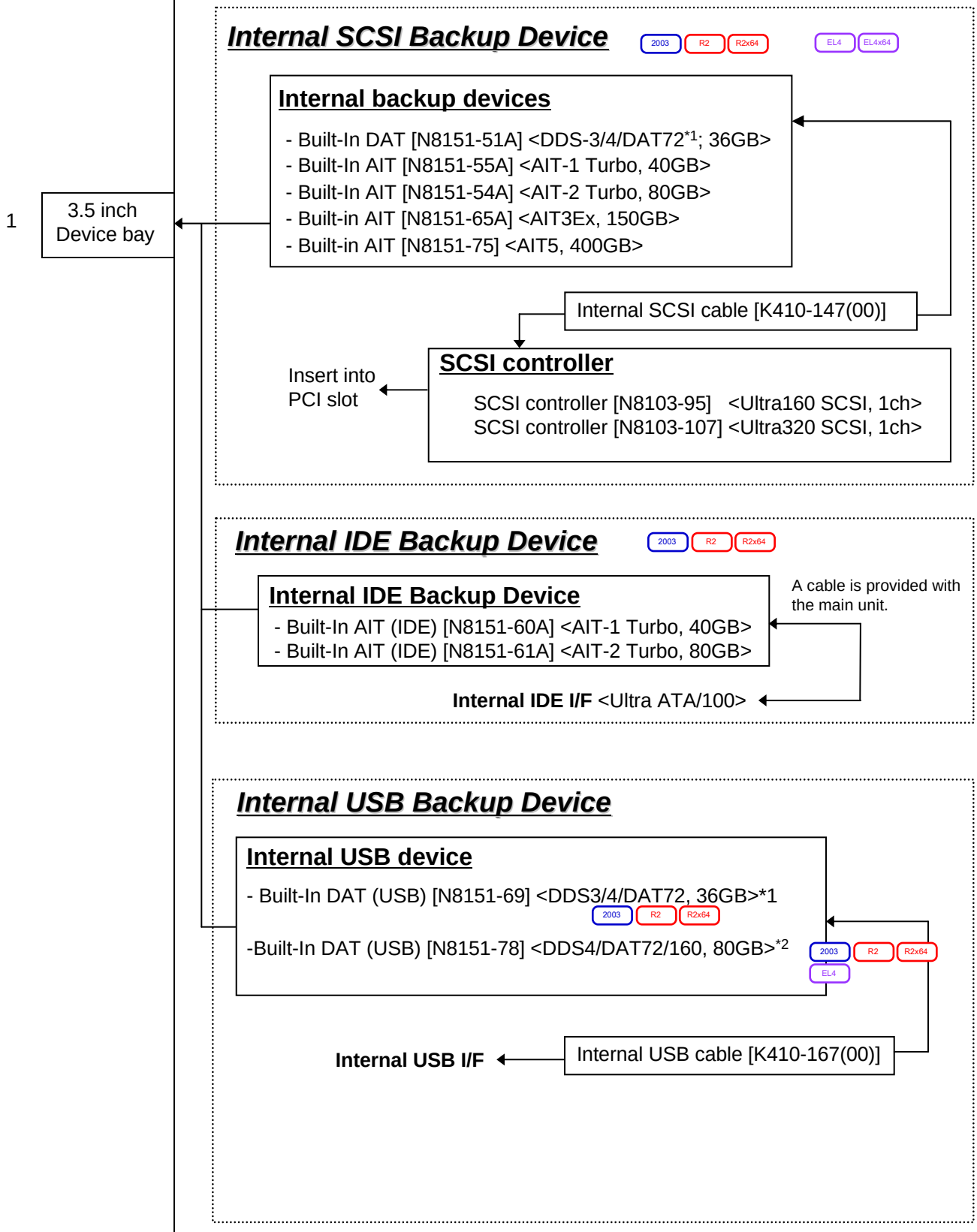
•The 17-inch LCD Console Unit [N8143-69F] allows the connection of up to 64 servers by cascading eight Server Switch Units [N8191-10F].

•The 17-inch LCD Console Unit [N8143-69F] does not support other SSUs [N8191-09F/ -09AF].

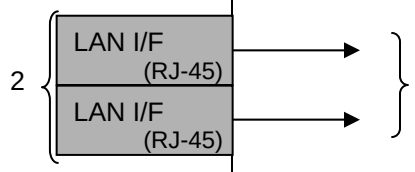


- **Provide either a Built-in or an External FDD for maintenance and OS installation purpose.**
- Automatic System Recovery of Windows Server 2003 operating system and Disaster Recovery Option of backup software are available for both FDD.

- Each of the front and rear panels features two USB ports.

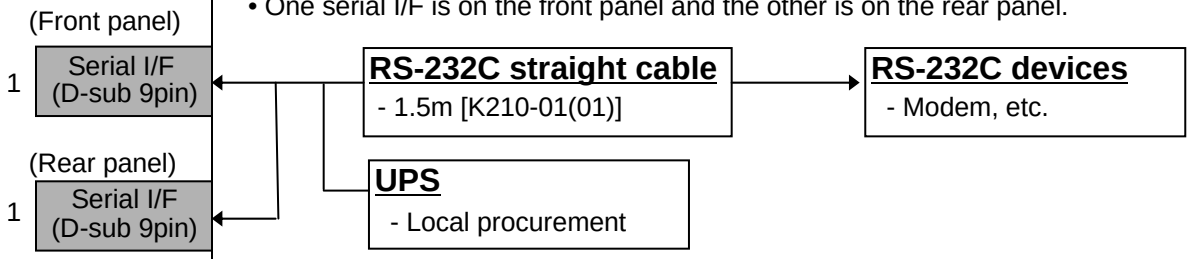


*1: DDS-1 and DDS-2 are not supported.
*2: DDS1/DDS2/DDS3 are not supported.
• Some devices require optional software. Refer to the table of supported software in the chapter3.

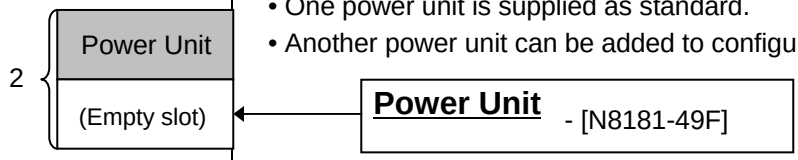


LAN connection <1000BASE-T / 100BASE-TX / 10BASE-T>

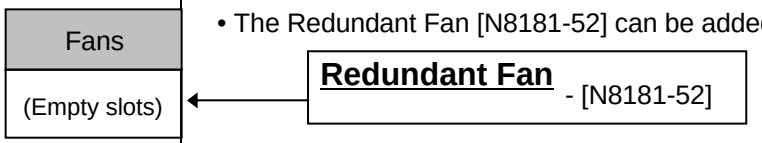
- Standard on-board LAN interfaces can configure AFT/ALB.
- Standard LAN interface and optional LAN board cannot configure AFT/ALB.



- One serial I/F is on the front panel and the other is on the rear panel.



- One power unit is supplied as standard.
- Another power unit can be added to configure Hot Swap Redundant Power Supply.



- Non-redundant fans are supplied as standard.
- The Redundant Fan [N8181-52] can be added to configure Hot Swap Redundant Fan.

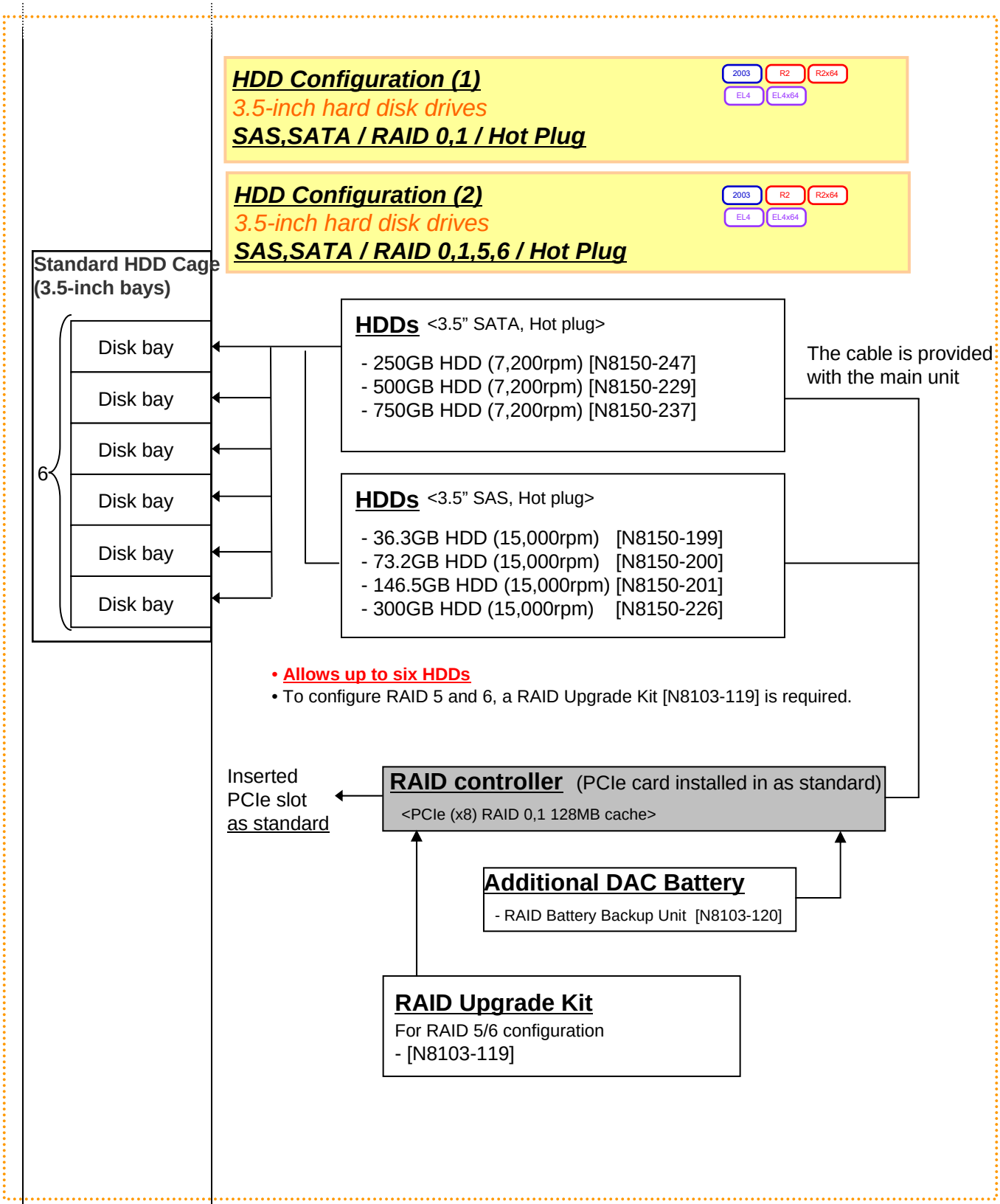
Rack mount option

Cable Arm - [N8143-70]

- The Cable arm [N8143-70] is used to bundle cables at rear.
- The dimension with the Cable arm [N8143-70] is 485Wx899Dx88Hmm (including the front bezel and protruding objects).

HDD Configuration

- Choose one configuration from the varieties below.
- The HDD carriers are NOT required for locally purchased non-NEC HDDs as the HDD carriers are provided with the main unit. See the “Information of Local Procurement” in the Chapter 2 for details.



HDD Configuration (3)
2.5-inch hard disk drives
SAS / RAID 0,1 / Hot Plug

2003 R2 R2x64 EL4 EL4x64

HDD Configuration (4)
2.5-inch hard disk drives
SAS / RAID 0,1,5,6 / Hot Plug

2003 R2 R2x64 EL4 EL4x64

Optional HDD Cage [N8154-14F] (2.5-inch bays)

8
- Disk bay
- Disk bay
- Disk bay
- Disk bay
- Disk bay
- Disk bay
- Disk bay
- Disk bay

HDDs <2.5-inch SAS, Hot plug>

- 36.3GB HDD (10,000rpm) [N8150-219]
- 73.2GB HDD (10,000rpm) [N8150-220]
- 146.5GB HDD (10,000rpm) [N8150-228]
- 36.3GB HDD (15,000rpm) [N8150-240]
- 73.2GB HDD (15,000rpm) [N8150-241]

The cable is provided with the main unit

- **Allows up to eight HDDs**
- Supports RAID0,1
- To configure RAID 5 and 6, a RAID Upgrade Kit [N8103-119] is required.

Inserted to a PCIe slot as standard

RAID controller (PCIe card installed in as standard)
<PCIe (x8) RAID 0,1 128MB cache>

Additional DAC Battery
- RAID Battery Backup Unit [N8103-120]

RAID Upgrade Kit
Requires to support RAID 5/6
- [N8103-119]

PCI slot

LAN

-100BASE-TX adapter (PCI) [N8104-111]*
-1000BASE-T adapter (PCI-X) [N8104-119]*
-1000BASE-T adapter (PCI-X) [N8104-120]*
-1000BASE-SX adapter (PCI) [N8104-112]*
-1000BASE-T adapter (PCIe(x1)) [N8104-126]*
-1000BASE-T adapter (PCIe(x4)) [N8104-121]*
-1000BASE-T adapter (PCIe(x4)) [N8104-122]

2003 R2 R2x64 EL4 EL4x64

-10GbE adapter (PCIe(x8)) [N8104-123A]* 2003 R2 R2x64

→ **LAN connection**

* For locally purchased non-NEC LAN adapters,
see the “Information of Local Procurement” in the Chapter 2.

SCSI controller for Device Expansion Unit

2003 R2 R2x64 EL4 EL4x64

- SCSI controller [N8103-95] <Ultra160 SCSI>
- SCSI controller [N8103-75] <Ultra320 SCSI>*
- SCSI controller [N8103-107] <Ultra320 SCSI>*

*You cannot use N8103-75 and N8103-107 at the same time.

- SCSI cable O
[K410-94(01)]
[K410-94(02)]

→ **Device Expansion Unit**

See section 1.9 “Device Expansion Unit.“

Disk array controller

2003 R2 R2x64

- [N8103-90] <SAS, External>

External I/F → **Disk Expansion Unit (SAS)**

Additional DAC battery [N8103-94]

SAS controller

2003 R2 R2x64 EL4 EL4x64

- [N8103-104]

→ **SATA/SAS Disk Array Unit or Device Expansion Unit**

Fibre channel controller

2003 R2 R2x64 EL4 EL4x64

- [N8190-127] <1ch, 4Gbps, optical>
- [N8190-131] <2ch, 4Gbps, optical>

→ **NEC Storage S Series Fibre Channel Disk Array Unit**

Fibre channel controller

2003 R2 R2x64 EL4 EL4x64

- [N8190-120] <1ch, 2Gbps, optical>

→ **Fibre Channel Disk Array Unit**

See section 1.8 “Disk Expansion Unit.“

Full-Height Riser Card

Riser Card Variety

- Standard: 64bit/100MHz PCI-X x2 + PCIe (x8) x1
- [N8116-18]: PCIe (x8) x1 + PCIe (x4) x2
- [N8116-07]: 64bit/133MHz(3.3V) PCI-X x1 + 64bit/100MHz(3.3V) PCI-X x2
- [N8116-08]: 64bit/33MHz(5V) PCI x3

Server Management (EXPRESSSCOPE Engine 2)

On-board RAS chip

The 120Rj-2 features the *EXPRESSSCOPE Engine 2* remote management controller as standard. The optional Remote KVM and Media License [N8115-03] allows for advanced server management.

Standard

EXPRESSSCOPE Engine 2

•Features a dedicated LAN port (100BASE-TX/10BASE-T) for remote sever management

•No PCI slot is required.

SystemGlobe DianaScope 1 license
(or equivalent of [UL1198-001])

•For additional licenses:
SystemGlobe DianaScope 1 license [UL1198-001]
SystemGlobe DianaScope 10 licenses [UL1198-011]

Option

Remote KVM and Media License [N8115-03]

The Remote KVM and Media License enables remote console and remote media features as the extended functionality of EXPRESSSCOPE Engine 2.

Remote console
Displays a graphics console on the web browser of remote terminals (PC/servers)
Controls remote terminals' keyboard and mouse via the web browser

Remote media
Provides access to the CD/DVD/FD on the remote terminals (PCs/servers) as if the user were accessing the drives locally.

120Rj-2 server management functions

		EXPRESSSCOPE Engine 2	EXPERSSSCOPE Engine 2 + DianaScope	EXPRESSSCOPE Engine 2 with Remote KVM and Media License [N8115-03]	EXPRESSSCOPE Engine 2 with Remote KVM and Media License [N8115-03] + DianaScope
Monitoring server	Monitor temperature /voltage /FAN /degeneration (CPU/memory)	x	x	x	x
	Collecting hardware event log	x	x	x	x
Stole monitoring /Automatic reboot	Monitor booting, BIOS/POST stall, OS stall, shutdown	x	x	x	x
Alerting	HW err, Boot err and OS panic (by SNMP,E-Mail) (via LAN)	x	x	x	x
	HW err, boot err, and OS panic (via COM port (modem))	x	x	x	x
Remote console (via COM port/LAN)	POST/BIOS setup, DOS utility	-	x	x	x
	Panic screen, Boot screen	x*1	x	x	x
	CUI screen (OS console)	x*2	x	x	x
	GUI screen (OS console)	-	x	x	x
Remote controlling (via COM port/LAN)	Remote reset/power on-off/dump	x	x	x	x
	OS Shutdown	x	x	x	x
	Remote media (CD/DVD/FD) (via LAN)	-	-	x	x
	CLP (Command Line Protocol, DMTF compliant)	x	x	x	x
	Remote control via Web browser (not required dedicated AP)	x	x	x	x
	Remote batch	-	x	-	x
	Scheduling (not requiring UPS)	-	x	-	x
Maintenance	Remote boot (PXE boot), maintenance partition boot	x	x	x	x
Others	Automatic IP address setting via DNS/DHCP	x	x	x	x
Remote wakeup	Wake On LAN, Wake On Ring	x	x	x	x
Group management	Monitoring/controlling by the group	-	x	-	x
Industry standard	IPMI	2.0	2.0	2.0	2.0

Note: all features are independent of OS status.

*1 Boot screen only.
*2 Via COM port only.

Optional Boards and Adaptable Expansion Slots

N code	Product name	Standard Slots			Standard riser card*2			Remarks
		Bus A	Bus B	Bus C	Bus D		Bus E	
		PCIe #1C	PCIe #2C	PCIe #3C	PCI-X #1B	PCI-X #2B	PCIe #3B	
		x8	x4	x4	64bit 100MHz		x8	
	Slot size (Full-height or Low Profile)	Low Profile			Full Height			
	Supported board type	x8 socket	x4 socket		3.3V		x8 socket	
	Installable board type *1	MD2			Long/Short			
-	RAID Controller (128MB, RAID 0,1) (PCI EXPRESS (x8))	-	-	O	-	-	-	Installed in as standard
N8103-90	Disk array controller (SAS, External) (PCI EXPRESS (x8))	-	-	-	-	-	O	Max. 2 N8103-90 cannot connect to the internal HDDs
N8103-95	SCSI controller (64bit/66MHz PCI)	-	-	-	O	O	-	Max. 3
N8103-75	SCSI controller (64bit/133MHz PCI-X)	-	-	-	O	O	-	Max. 3 Do not use with N8103-107
N8103-107	SCSI controller (PCI EXPRESS(x1))	O	O	-	-	-	O	Do not use with N8103-75
N8103-104	SAS controller (PCI EXPRESS(x8))	O	-	-	-	-	O	Max. 2, not for internal HDD
N8190-120	Fibre Channel controller (2Gbps/Optical) (64bit/133MHz PCI-X)	-	-	-	O	O	-	
N8190-127	Fibre Channel controller (4Gbps/Optical) (PCI EXPRESS(x4))	O	O	-	-	-	O	
N8190-131	Fibre Channel controller (4Gbps/Optical) (PCI EXPRESS(x4))	O	O	-	-	-	O	
N8104-111	100BASE-TX adapter (32bit/33MHz PCI)	-	-	-	O	O	-	
N8104-119	1000BASE-T adapter (64bit/133MHz PCI-X)	-	-	-	O	O	-	*3
N8104-120	1000BASE-T adapter (2ch) (64bit/133MHz PCI-X)	-	-	-	O	O	-	
N8104-126	1000BASE-T adapter (PCI EXPRESS(x1))	O	O	-	-	-	O	Max. 2 *4
N8104-121	1000BASE-T adapter (2ch) (PCI EXPRESS(x4))	-	-	-	-	-	O	10BASE-T is not supported. *5
N8104-122	1000BASE-T adapter (2ch) (PCI EXPRESS(x4))	O	O	-	-	-	-	Max. 2 10BASE-T is not supported *5
N8104-112	1000BASE-SX adapter (64bit/133MHz PCI-X)	-	-	-	O	O	-	Max. 1 (When configuring AFT teaming, max.2) *3
N8104-123A	10GBASE-SR adapter (PCI EXPRESS(x8))	O	-	-	-	-	O	Max. 1

*1 Maximum board length
Full Height short: up to 173.1mm long: up to 312mm
Low Profile MD1: up to 119.9mm MD2: up to 167.6mm

*2 To install optional Riser Cards [N8116-07/-08/-18], remove the standard riser card. The optional cards are mutually exclusive.

*3 Up to one each PCI bus. The 120Rj-2 allows up to two N8104-120 adapters. Do not use the N8104-119/-120 adapters with the N8104-112 adapter in the same system.

*4 The N8104-126 adapter can be teamed to the identical adapter only (not to other adapters).

*5 Cannot be teamed to other adapters for AFT and ALB. The 120Rj-2 supports up to two adapters ([N8104-121] and/or [N8104-122]).

Note:

- You cannot create an AFT or ALB team across the standard LAN interface and optional LAN board.
- PCI boards with different clock speeds operate at the lowest speed when inserted into the same PCI bus.
- You cannot use two or more PCI boards when installing four or more 8GB Memory Module Set [N8102-312].

Optional Boards and Adaptable Expansion Slots

N code	Product name	Standard Slots			Optional riser card [N8116-07]*2			Remarks
		Bus A	Bus B	Bus C	Bus D	Bus E	Bus F	
		PCIe #1C	PCIe #2C	PCIe #3C	PCI-X #1B	PCI-X #2B	PCI-X #3B	
		x8	x4	x4	64bit/ 100MHz	64bit/ 133MHz	64bit /100MHz	
	Slot size (Full-height or Low Profile)	Low Profile			Full Height			
	Supported board type	x8 socket	x4 socket		3.3V			
	Installable board type *1	MD2			Long/Short			
-	RAID Controller (128MB, RAID 0,1) (PCI EXPRESS (x8))	-	-	O	-	-	-	Installed in as standard
N8103-95	SCSI controller (64bit/66MHz PCI)	-	-	-	O	O	O	
N8103-75	SCSI controller (64bit/133MHz PCI-X)	-	-	-	O	O	O	Do not use with N8103-107
N8103-107	SCSI controller (PCI EXPRESS(x1))	O	O	-	-	-	-	Do not use with N8103-75
N8103-104	SAS controller (PCI EXPRESS(x8))	O	-	-	-	-	-	Max. 2, not for internal HDD
N8190-120	Fibre Channel controller (2Gbps/Optical) (64bit/133MHz PCI-X)	-	-	-	O	O	O	
N8190-127	Fibre Channel controller (4Gbps/Optical) (PCI EXPRESS(x4))	O	O	-	-	-	-	
N8190-131	Fibre Channel controller (4Gbps/Optical) (PCI EXPRESS(x4))	O	O	-	-	-	-	
N8104-111	100BASE-TX adapter (32bit/33MHz PCI)	-	-	-	O	O	O	
N8104-119	1000BASE-T adapter (64bit/133MHz PCI-X)	-	-	-	O	O	O	*3
N8104-120	1000BASE-T adapter (2ch) (64bit/133MHz PCI-X)	-	-	-	O	O	O	
N8104-126	1000BASE-T adapter (PCI EXPRESS(x1))	O	O	-	-	-	-	*4
N8104-122	1000BASE-T adapter (2ch) (PCI EXPRESS(x4))	O	O	-	-	-	-	10BASE-T is not supported *5
N8104-112	1000BASE-SX adapter (64bit/133MHz PCI-X)	-	-	-	O	O	O	Max. 1 (When configuring AFT teaming, max.2) *3
N8104-123A	10GBASE-SR adapter (PCI EXPRESS(x8))	O	-	-	-	-	-	

*1 Maximum board length
Full Height short: up to 173.1mm long: up to 312mm
Low Profile MD1: up to 119.9mm MD2: up to 167.6mm

*2 To install optional Riser Cards [N8116-07/-08/-18], remove the standard riser card. The optional cards are mutually exclusive.

*3 Up to one each PCI bus. The 120Rj-2 allows up to two N8104-120 adapters. Do not use the N8104-119/-120 adapters with the N8104-112 adapter in the same system.

*4 The N8104-126 adapter can be teamed to the identical adapter only (not to other adapters).

*5 Cannot be teamed to other adapters for AFT and ALB. The 120Rj-2 supports up to two adapters ([N8104-121] and/or [N8104-122]).

Note:

- You cannot create an AFT or ALB team across the standard LAN interface and optional LAN board.
- PCI boards with different clock speeds operate at the lowest speed when inserted into the same PCI bus.
- You cannot use two or more PCI boards when installing four or more 8GB Memory Module Set [N8102-312].

Optional Boards and Adaptable Expansion Slots

N code	Product name	Standard Slots			Optional riser card [N8116-18]*2			Remarks
		Bus A	Bus B	Bus C	Bus D	Bus E	Bus F	
		PCIe #1C	PCIe #2C	PCIe #3C	PCI-X #1B	PCI-X #2B	PCI-X #3B	
		x8	x4	x4	x4	x4	x8	
	Slot size (Full-height or Low Profile)	Low Profile			Full Height			
	Supported board type	x8 socket	x4 socket		x8 Socket			
	Installable board type *1	MD2			Long/Short			
-	RAID Controller (128MB, RAID 0,1) (PCI EXPRESS (x8))	-	-	O	-	-	-	Installed in as standard
N8103-90	Disk array controller (SAS, External) (PCI EXPRESS (x8))	-	-	-	O	O	O	Max. 2 N8103-90 cannot connect to the internal HDDs
N8103-107	SCSI controller (PCI EXPRESS(x1))	O	O	-	O	O	O	Do not use with N8103-75
N8103-104	SAS controller (PCI EXPRESS(x8))	O	-	-	O	O	O	Not for internal HDD
N8190-127	Fibre Channel controller (4Gbps/Optical) (PCI EXPRESS(x4))	O	O	-	O	O	O	
N8190-131	Fibre Channel controller (4Gbps/Optical) (PCI EXPRESS(x4))	O	O	-	O	O	O	
N8104-126	1000BASE-T adapter (PCI EXPRESS(x1))	O	O	-	O	O	O	Max. 2 *4
N8104-121	1000BASE-T adapter (2ch) (PCI EXPRESS(x4))	-	-	-	O	O	O	10BASE-T is not supported. *5
N8104-122	1000BASE-T adapter (2ch) (PCI EXPRESS(x4))	O	O	-	-	-	-	Max. 2 10BASE-T is not supported *5
N8104-123A	10GBASE-SR adapter (PCI EXPRESS(x8))	O	-	-	O	O	O	Max. 1

*1 Maximum board length
Full Height short: up to 173.1mm long: up to 312mm
Low Profile MD1: up to 119.9mm MD2: up to 167.6mm

*2 To install optional Riser Cards [N8116-07/-08/-18], remove the standard riser card. The optional cards are mutually exclusive.

*3 Up to one each PCI bus. The 120Rj-2 allows up to two N8104-120 adapters. Do not use the N8104-119/-120 adapters with the N8104-112 adapter in the same system.

*4 The N8104-126 adapter can be teamed to the identical adapter only (not to other adapters).

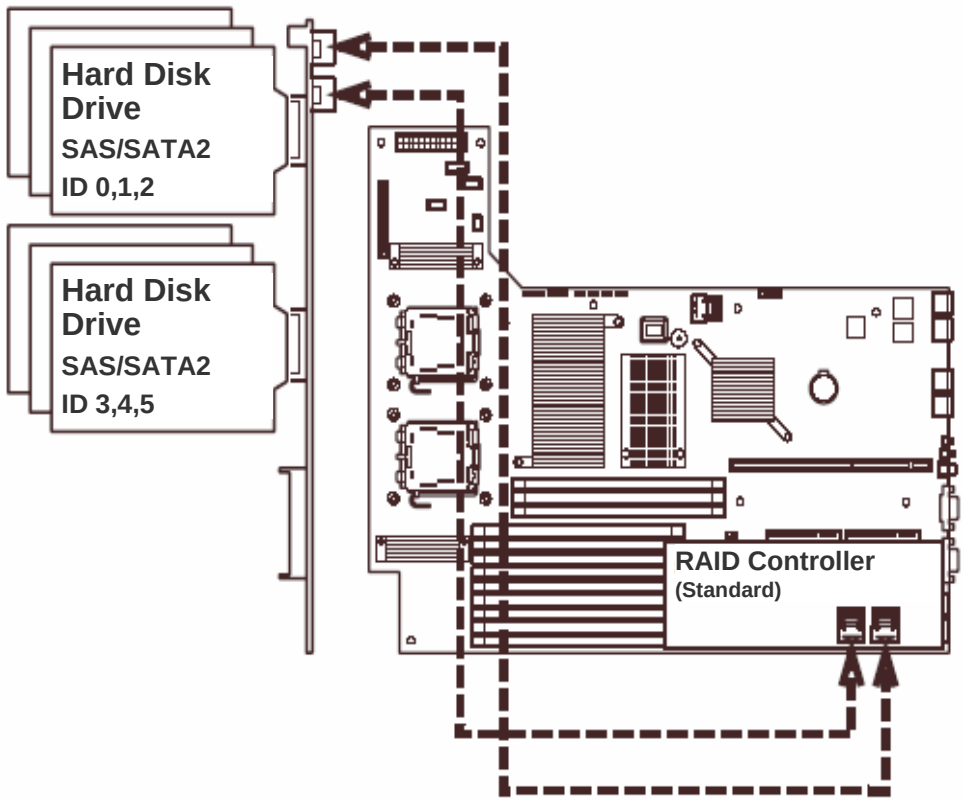
*5 Cannot be teamed to other adapters for AFT and ALB. The 120Rj-2 supports up to two adapters ([N8104-121] and/or [N8104-122]).

Note:

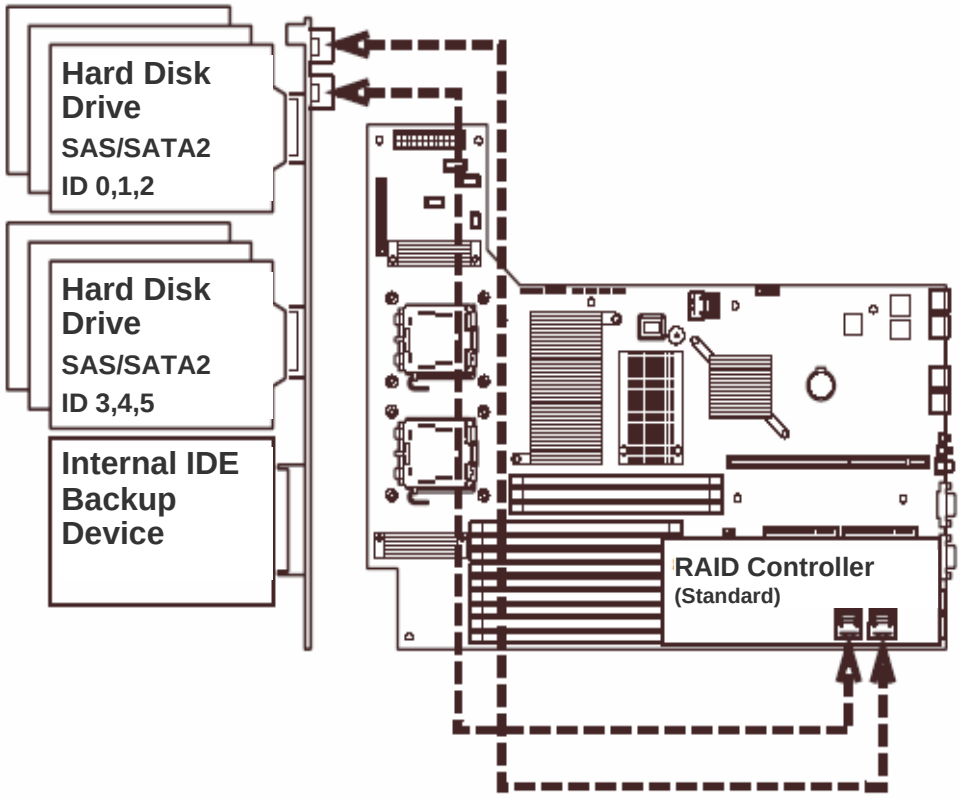
- You cannot create an AFT or ALB team across the standard LAN interface and optional LAN board.
- PCI boards with different clock speeds operate at the lowest speed when inserted into the same PCI bus.
- You cannot use two or more PCI boards when installing four or more 8GB Memory Module Set [N8102-312].

Adding File Device

1. Standard Configuration

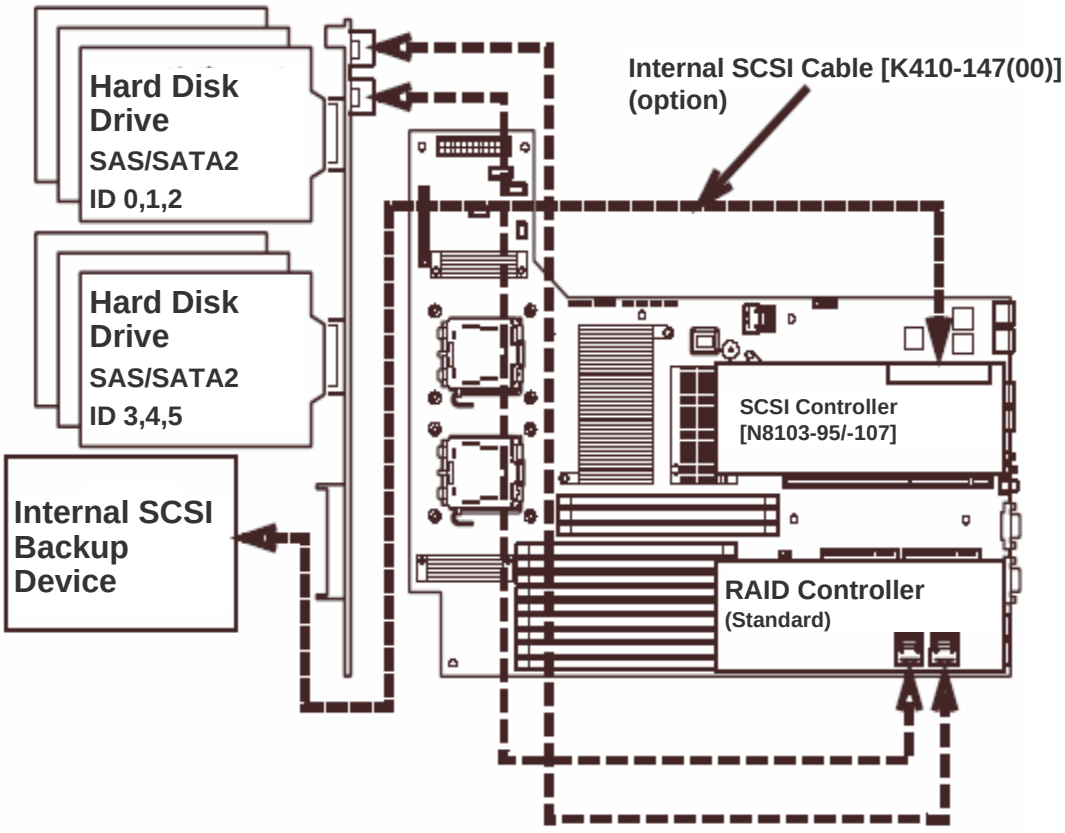


2. Standard Configuration with IDE Backup Device



3. Standard Configuration with SCSI Backup Device

*Requires a SCSI controller [N8103-95/-107] and an Internal SCSI Cable [K410-147(00)] to use SCSI backup device



4. Standard Configuration with USB Backup Device

*Requires an Internal USB Cable [K410-167(00)] to use USB backup device